

Abstract

A system for encoding, comparing, and recognizing individuals by analysis of their fingernails employs collimated light having finite bandwidth (810). The light (810) is divided into polarized scanning and reference beams (945) and (846). The scanning beam scans across a subject's nail bed (1010), and the light (1020) reflected from the birefringent component within the nail bed is compared with the reference beam (846). As the scanning beam (945) scans across the subject's nail bed, more or less light reflects from the nail bed (1010), according to the peaks and valleys in the epidermal folds (1000) of the nail bed. The reflected light is analyzed and reduced to binary data as a function of position across the subject's nail bed. These binary data are used to uniquely identify an individual. The data from a scan can be compared with stored data in a pattern recognition algorithm (2000), resulting in a positive or negative identification of an individual.